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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,862	09/09/2003	Christopher Richard Doerr	Doerr 73-13 (LCNT/125620)	2054
26291	7590	03/02/2005	EXAMINER KIANNI, KAVEH C	
MOSER, PATTERSON & SHERIDAN L.L.P. 595 SHREWSBURY AVE, STE 100 FIRST FLOOR SHREWSBURY, NJ 07702			ART UNIT 2883	PAPER NUMBER

DATE MAILED: 03/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/657,862	<b>Applicant(s)</b> DOERR ET AL.	
	<b>Examiner</b> Kianni C. Kaveh	<b>Art Unit</b> 2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 10-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 10-29 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This application contains claims directed to the following patentably distinct species of the claimed invention: Group I invention, claims 1-9 directed to an interleaver with at least two multi-section optical couplers optically coupled to an input coupler, Y-branched coupler; Group II invention, claims 10-27, is directed to an optical add/drop multiplexer (OADM) having interleaver and de-interleaver; Group III invention, apparatus and method, claims 28-29 are directed to an interleaver phase shift altering the relative phase shift between at least two separate optical paths to produce a desired power ratio for interleaver. Thus, each of the above group limitations is directed toward an invention that would require a different search than that of other group inventions.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Mr. Wall on 2/15/05 a provisional election was made without traverse to prosecute the invention of Group I invention, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-29 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “thermo optic trimmers” in claim 7 is used by the claim to mean “adjusting phase by thermo optic process”, while the accepted meaning is “thermo optic heaters.” The term is indefinite because the specification does not clearly redefine the term. The term ‘trim’ in the context of phase adjustment is used in the specification in page 11, 3<sup>rd</sup> paragraph. But it is not clear what the inventors mean by “to trim via hyperheating”.

### **Claim Rejections - 35 USC § 103**

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saida et al. (US 2003/0031406).

Regarding claim 1-2, 4 and 8, Saida teaches an interleaver (shown in at least fig. 6), comprising:  
an input coupler 112 comprising at least one input port 11 and at least two branches (shown in fig. 6, item 12 having two branches), and  
at least two multi-branched optical couplers 13a,b optically coupled to said input coupler, said at least two branches optically coupled to a first of said at least two multi-branch optical couplers 13a,b (see fig. 6, item branched waveguides/couplers), and  
wherein at least two waveguides 14,15 optically couple the first of said at least two multi-branch optical couplers 13,a,b to a second of said at least two multi-section optical couplers 16,a,b.

However, Saida does not explicitly teach wherein the above multi-branched optical coupler is a multi-section coupler and the input coupler comprises a Y-branch coupler, (see fig. 7, item 29); wherein the input optical coupler splits an input optical signal equally among the at least two branches, wherein said substantially similar optical couplers comprise evanescent couplers. Nevertheless, Saida states that the interleaver is split to other input/output optical groups (see parag. 0015) and that coupling branches can have one input/output as shown in fig. 7 with two input/output

branches and that a coupler can have a 50% coupling ratio (see parag. 0008). Thus, it is obvious/well-known to those of ordinary skill in the art when the invention was made that multi-branches optical coupler is known as a multi-section coupler and that it would have been obvious to those of ordinary skill in the art when the invention was made to replace the input coupler with that of 50% coupler and /or Y-branches coupler and that as a matter of design choice one of ordinary skill in the art would replace the above 'similar' couplers with that of well known evanescent couplers since such optical coupling system would provide an interleaver which would allow parameters to be easily adjusted, temperature be compensated and essentially free of dispersion/noise (see parag. 0014).

- The statements advanced in claim 1, above, as to the applicability and disclosure of Saida et al. are incorporated herein as follows:

Regarding claims 3, 5-7 and 9, Saida further teaches wherein said multi-section optical couplers each comprise:

at least three substantially similar optical couplers adjacent ones of said optical couplers interconnected via at least one set of waveguides 14,15, each of said sets of waveguides comprising a path-length difference between the waveguides therein (see at least fig. 6 and 15, item waveguides have different lengths/delay-lines with each section having two paths with similar 3 optical couplers);

at least two waveguides optically coupling the input coupler 12 to a first multi-branch optical coupler 13; and at least two waveguides 14,15 optically coupling each of the at least two multi-section optical couplers 13a,b; wherein the path-length difference between each set of the at least two waveguides is substantially larger than a wavelength of a traversing optical signal (see at least parag. 0015; wherein by multiplying the delay line equation, having absolute value with +/- signs, by  $-u$  the path-length difference/delay-line-difference between each set of the at least two waveguides is substantially larger than a wavelength  $\lambda$  of a traversing optical signal); wherein each set of the at least two waveguides comprises a means for causing a controllable phase shift (see at least fig. 6, items phase shifters 19 and 20); wherein said means for causing a phase shift comprises thermo-optic trimmers 19,20; wherein said interleaver is integrated onto a planar lightwave circuit (see at least fig. 1 and paragraphs 006-0007).

#### ***Citation of Relevant Prior Art***

4. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Johannessen et al., 2004/0008944 teaches a conventional interleaver with a Y-branch and/or evanescent coupler

Saida et al. 6724957 teaches at least claim 1

Arai et al. 6724954 teaches at least claim 1

Komatsu et al. 2002/0181857 teaches at least claim 1



Oguma et al. 6606433 teaches at least claim 1

Hui et al. 20040218259 teaches at least claim 1

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

***Contact Information***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

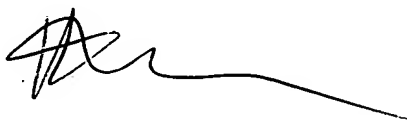
**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.



K. Cyrus Kianni  
Patent Examiner  
Group Art Unit 2883

February 23, 2005